

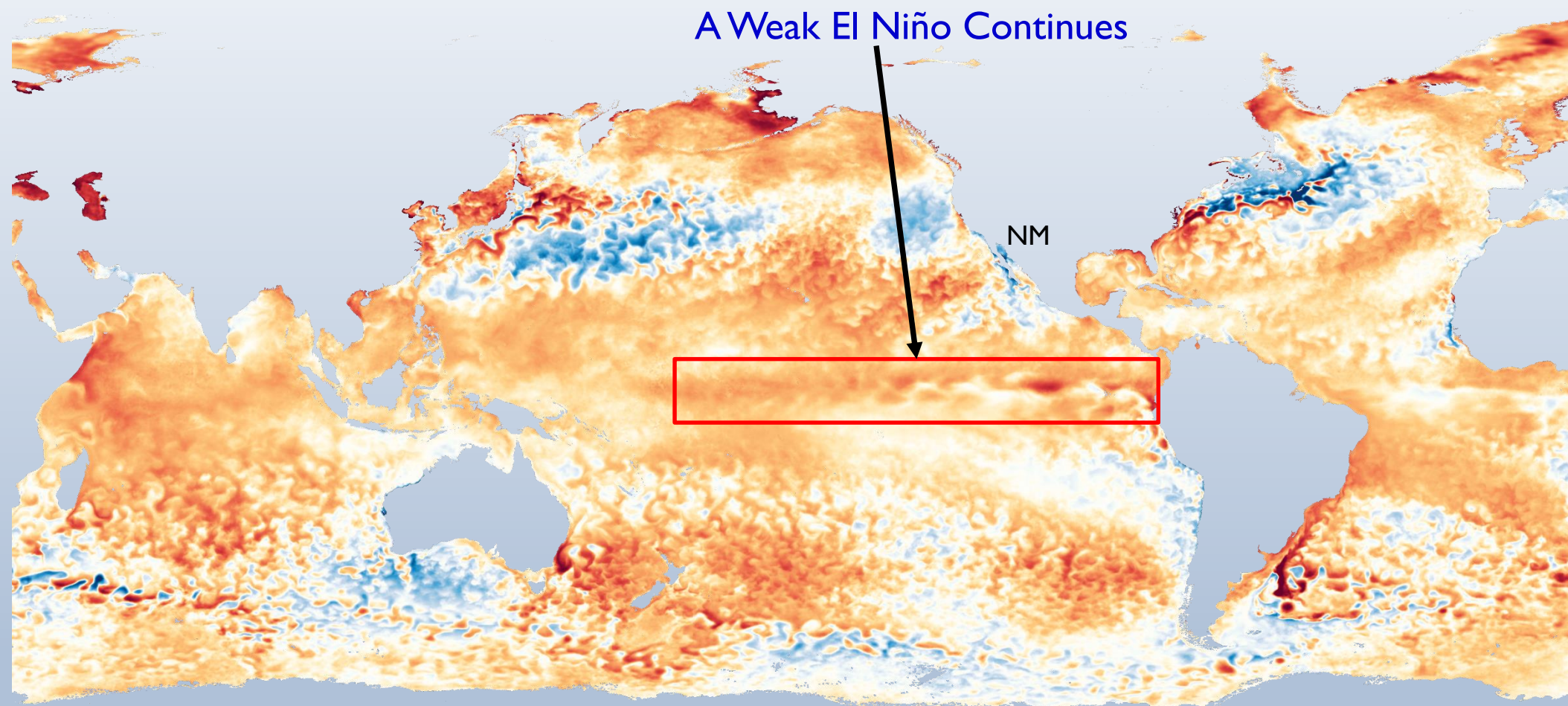
# 2019 June Outlook

For Northern & Central New Mexico



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**Figure 1.** Satellite derived Sea Surface Temperature Anomalies (SSTAs) averaged between 5/20/2019-5/26/2019. Colors indicate cooler (blue) or warmer (red) than the historical average (for the period 1985-2012). How will a weak El Niño continuing into June impact precipitation and temperature in northern and central New Mexico?

# 2019 June Outlook

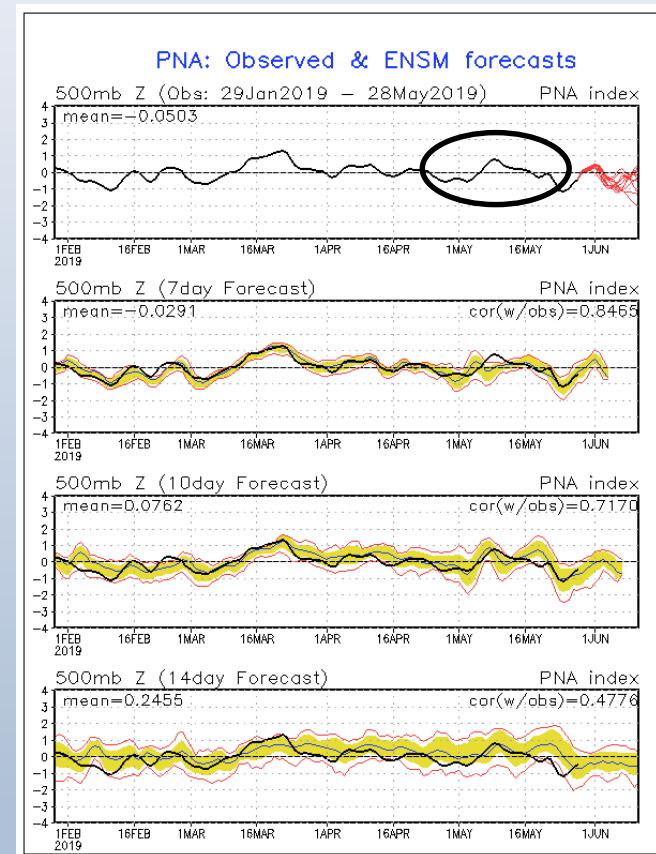
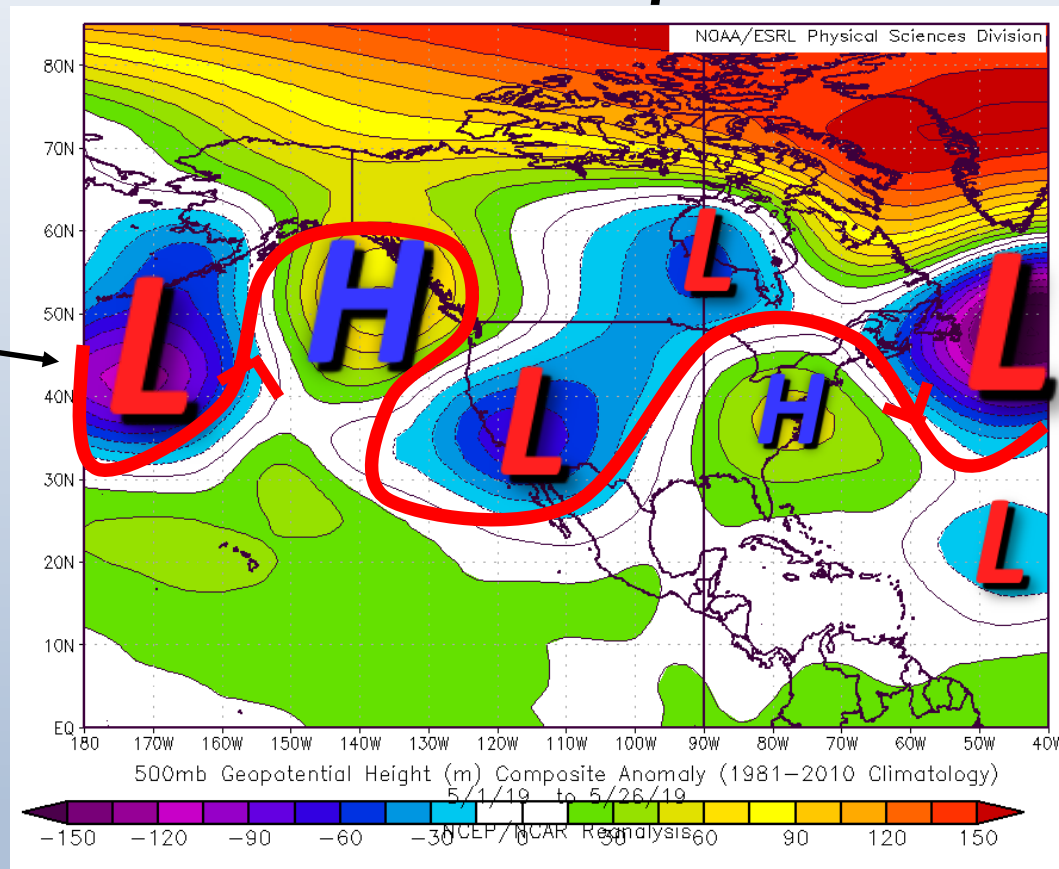
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## Positive Pacific-North American Pattern (PNA)

Polar Jet Stream



**Figures 2-3.** Most of May across much of central and northern New Mexico was wetter and cooler than average. Why? The climate pattern during much of May 2019 can be attributed to a weak El Niño which sent the jet stream into a familiar pattern. A positive PNA pattern (above) developed in early May and continued through much of the month. In the positive state of the PNA, above-average pressure is found over the subtropical Pacific (close to Hawaii) and centered over western Canada. Below-average pressure occurs over the North Pacific Ocean and along the southeastern United States.



# 2019 June Outlook

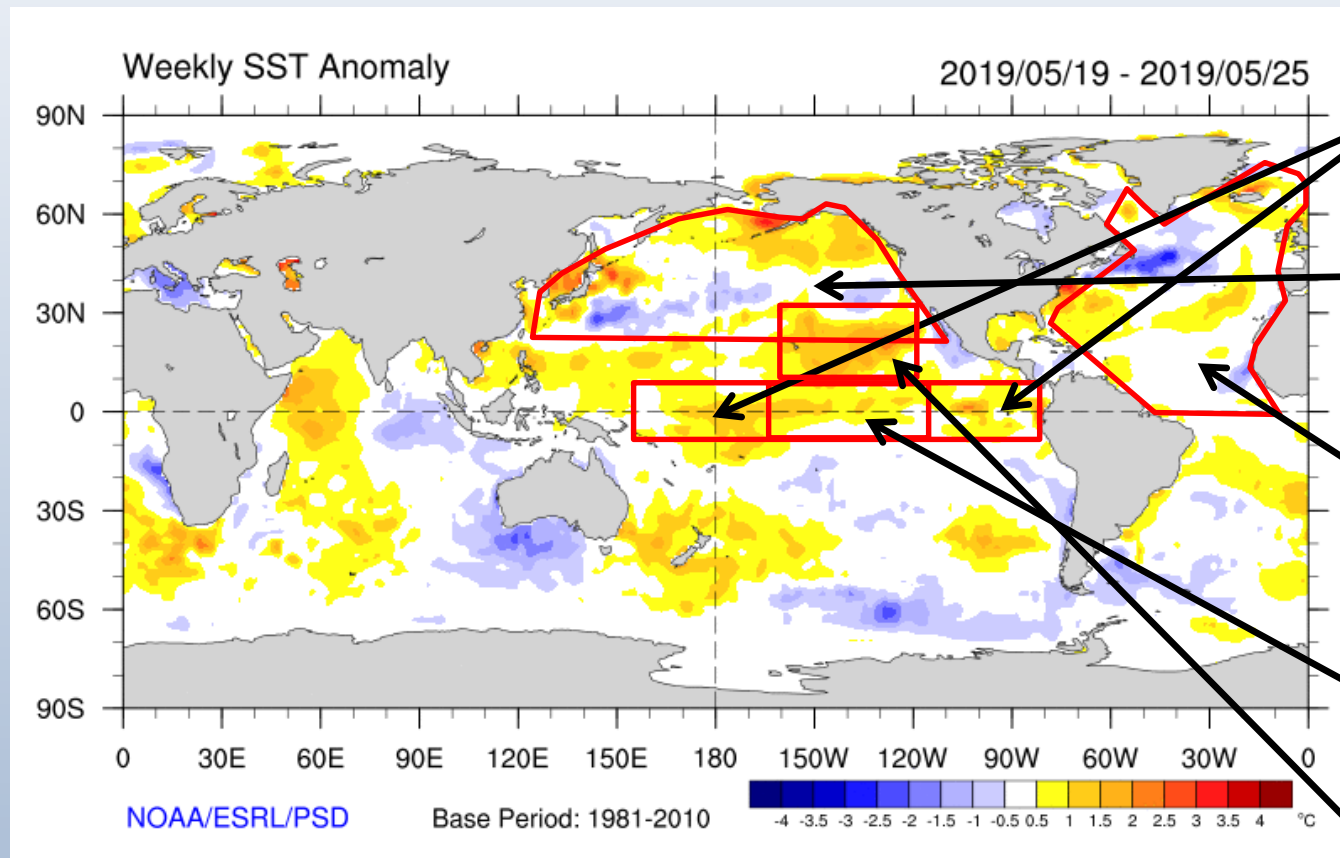
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\*SSTs are what drive tropical & subtropical thunderstorms. It's these thunderstorms that drive the jet stream and global weather patterns.



➤ Multivariate ENSO Index (MEI) for MAR-APR 2019: **+0.3**

➤ Pacific Decadal Oscillation (PDO) for APR 2019: **+1.07**

➤ Atlantic Multidecadal Oscillation (AMO) for APR 2019: **+0.123**

➤ Oceanic Niño Index (ONI) (uses **Niño 3.4 region** - inner rectangle) for FMA 2019: **+0.8**

➤ Pacific Meridional Mode (PMM) for APR 2019: **+2.1**

**Figure 4.** Weekly SST Anomalies in the Equatorial Pacific Ocean in May 2019 showing a weak El Niño conditions in the equatorial Pacific.

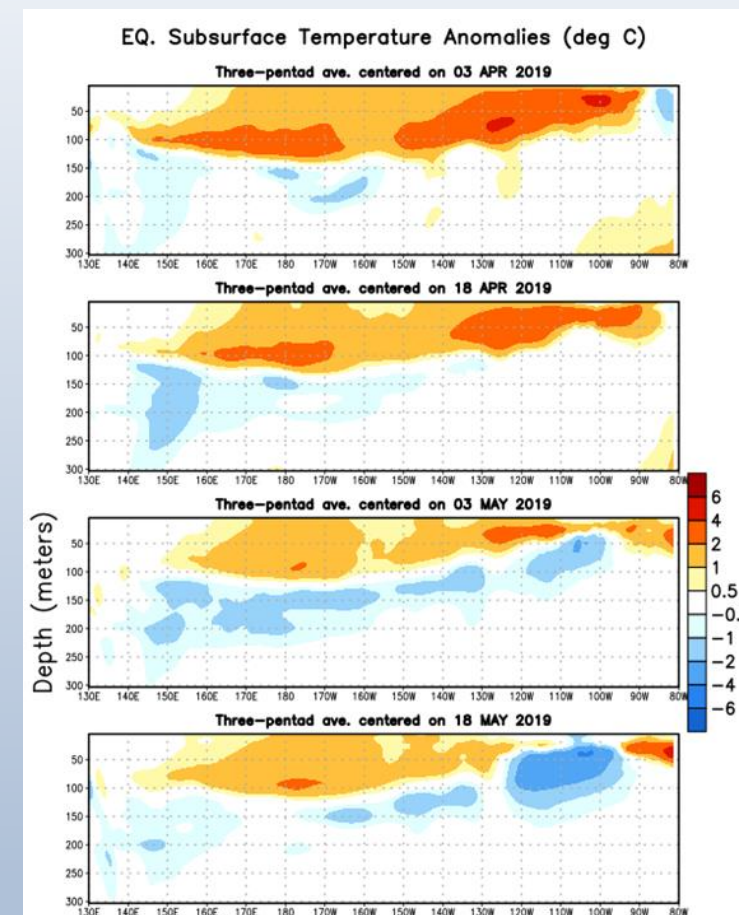
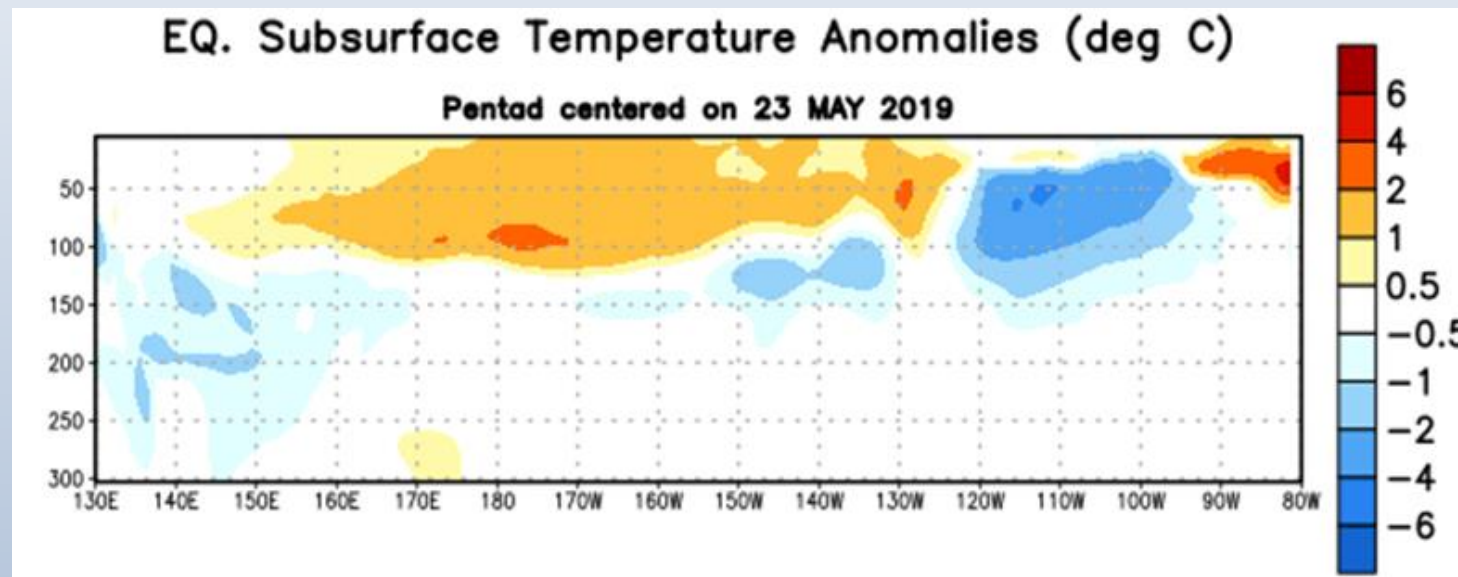
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**Figure 5-6.** Sub-surface temperature anomalies at the equator. Sub-surface temperatures often lead the surface temperatures by several months. An increasing amount of warm water under the surface would provide some confidence to shore up the models that are forecasting weak El Niño conditions in summer. Currently, sub-surface temperatures in the eastern Pacific continue to cool but a strong Kelvin wave off the Horn of African is expected to change that this week.

# 2019 June Outlook

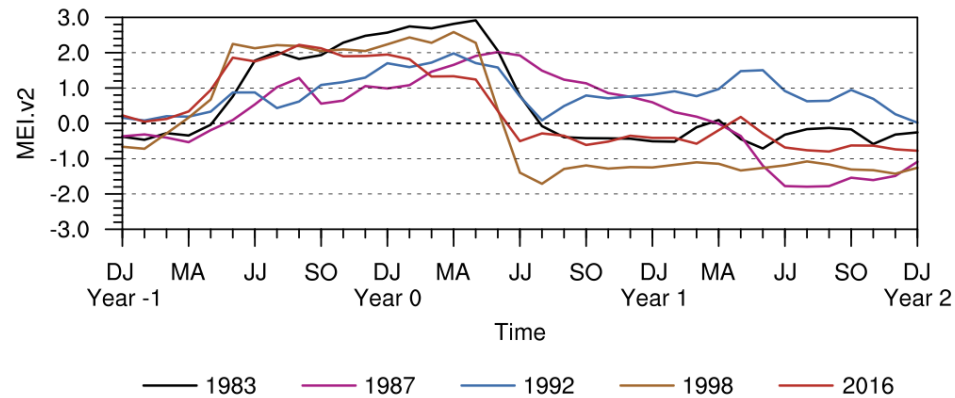
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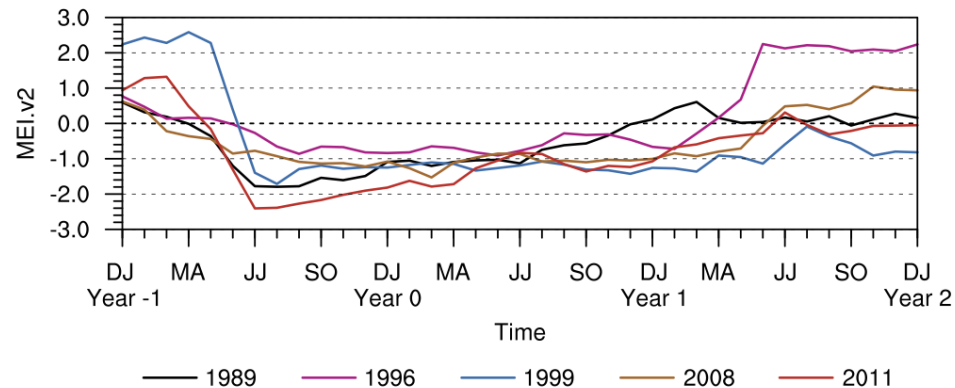
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## MEI.v2 Evolution of Historical ENSO Events

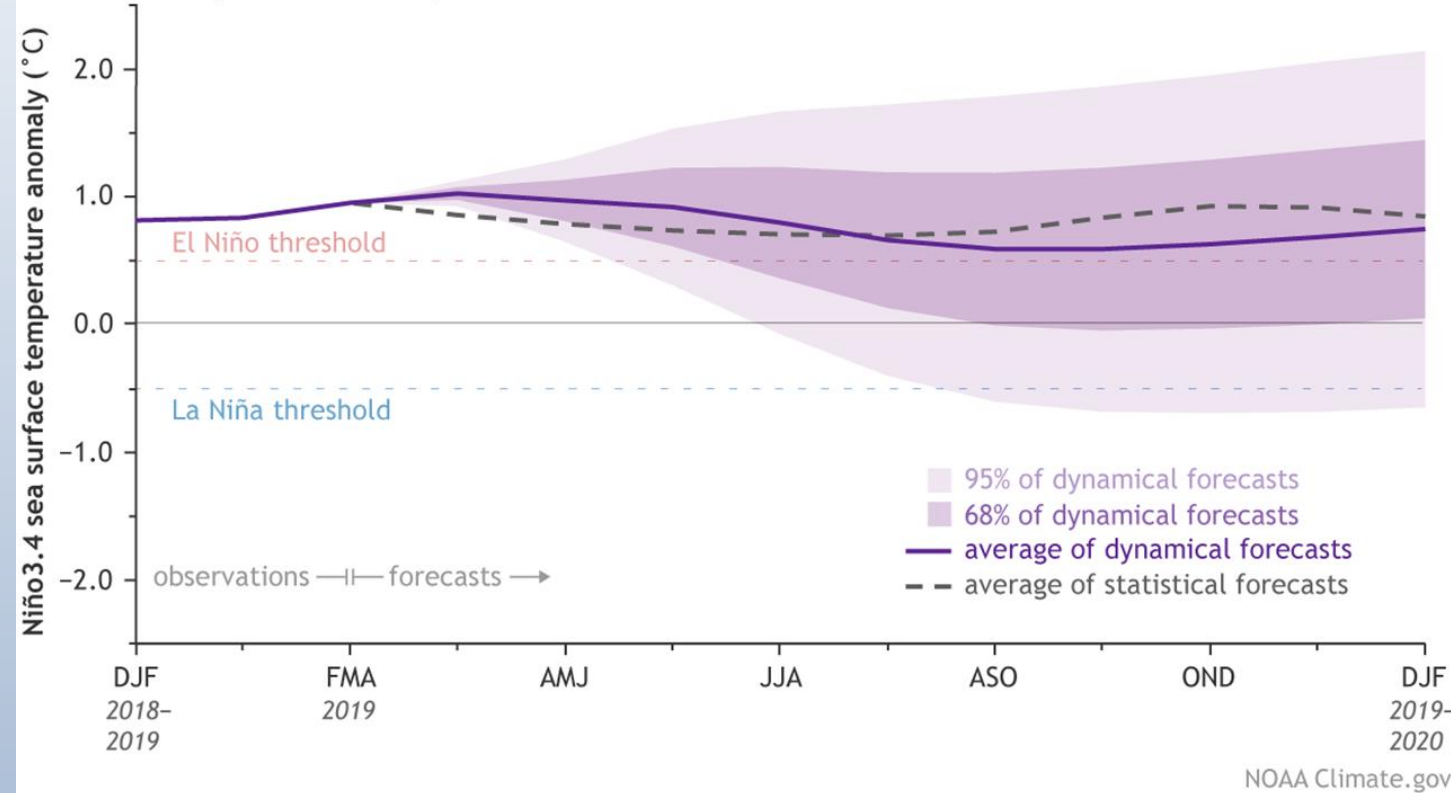
### (a) El Niño



### (b) La Niña



## NMME monthly forecasts, May 2019

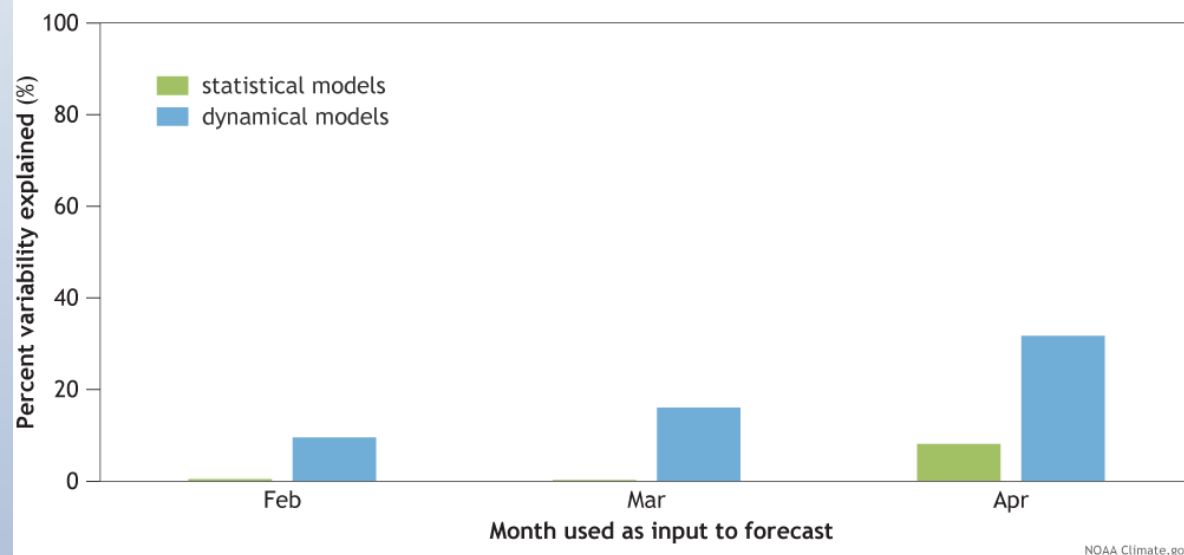


NOAA Climate.gov

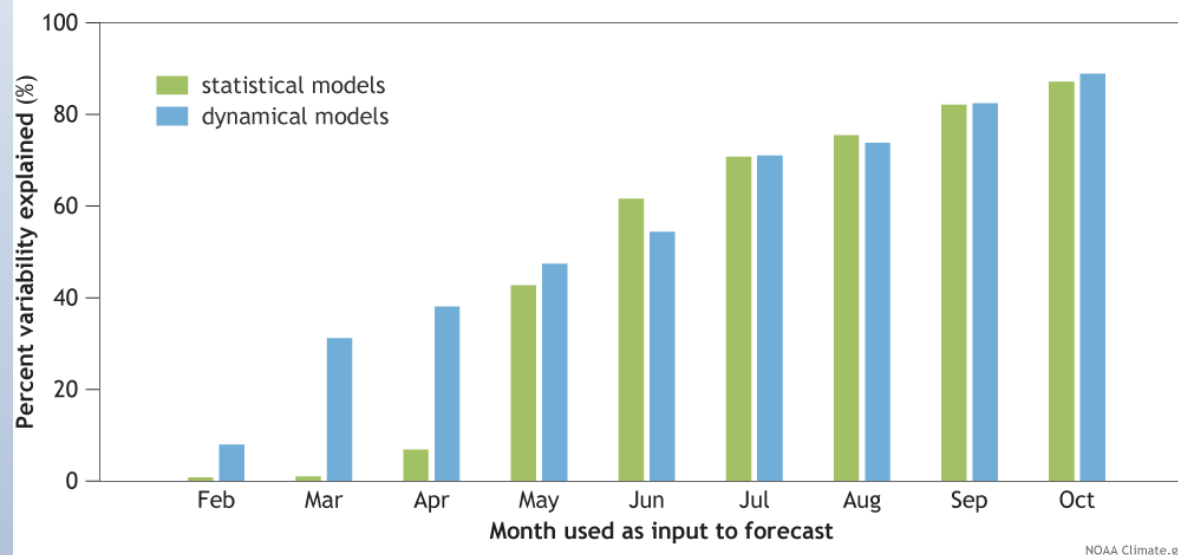
**Figure 7-8.** Typical evolution of El Niño Southern Oscillation (ENSO) using the Multivariate ENSO Index (MEI) (left image). Normally, El Niño develops in spring and fades in summer of the following year. This year however, it's forecast to keep its strength through summer (right image).

## Spring Predictability Barrier

How much ENSO variability can be predicted for May–July forecast?



How much ENSO variability can be predicted for Nov–Jan forecast?



**Figures 9-10.** Spring Predictability Barrier is not a physical barrier but a period when climate models have a difficult time making accurate forecasts. After the spring in the Northern Hemisphere, the ability of the models to predict becomes increasingly better.



# 2019 June Outlook

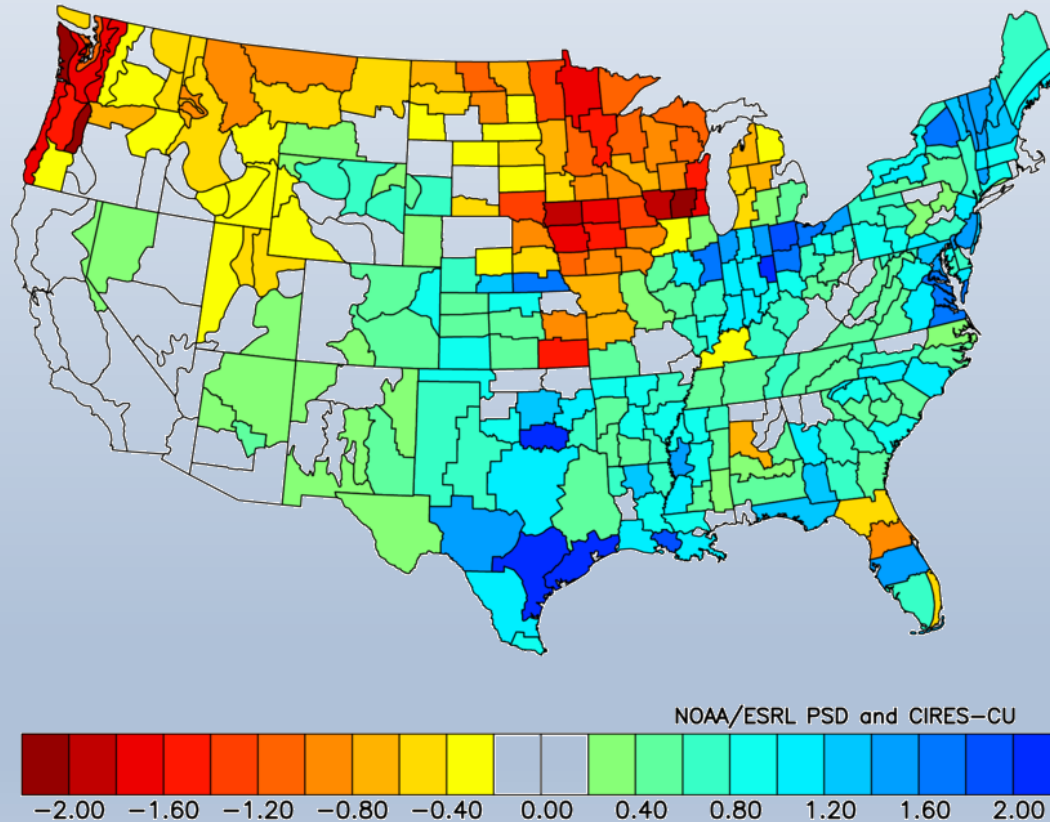
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## Analog Years

NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)  
Jun 1987, 1992, 2015  
Versus 1981–2010 Longterm Average



**Figure 11.** While analog years continue to show declining skill as our climate system changes, here's a peek at the three most recent “analog”, 1987, 1992, and 2015.

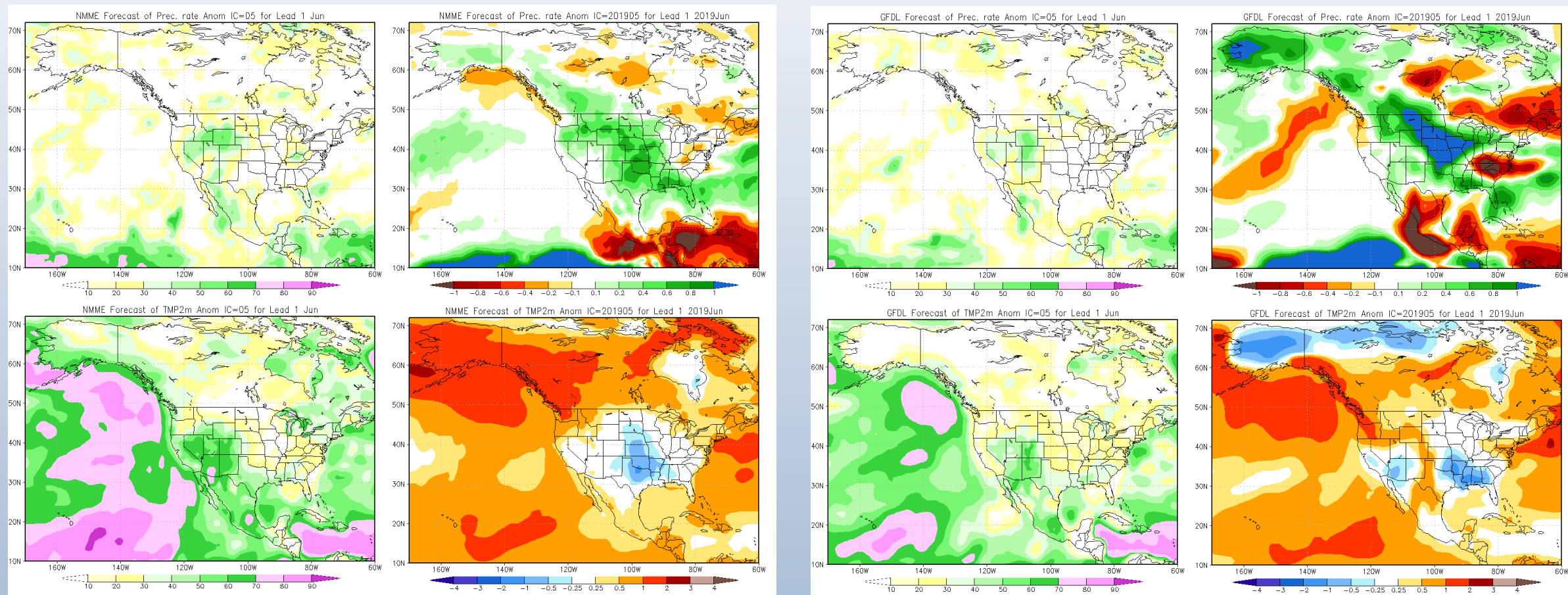
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**Figures 12-19.** Let's cut to the chase since this outlook is just for June, which is a climatological outlier. **An extensive North American Monsoon Outlook will be out in early June once we get past the spring predictability "barrier".** The North American Multi-Model Ensemble (NMME) shows good skill percentages over New Mexico in June and is forecasting above average precipitation for most of NM. The Geophysical Fluid Dynamics Model (GFDL) has good skill for much of northern and central NM and has a forecast of slightly above average precipitation for NM, especially north. Both models show very good skill regarding temperature and are forecasting near to slightly below average temperatures for the entire state. Keep in mind the NMME is an ensemble model with 11 different members.



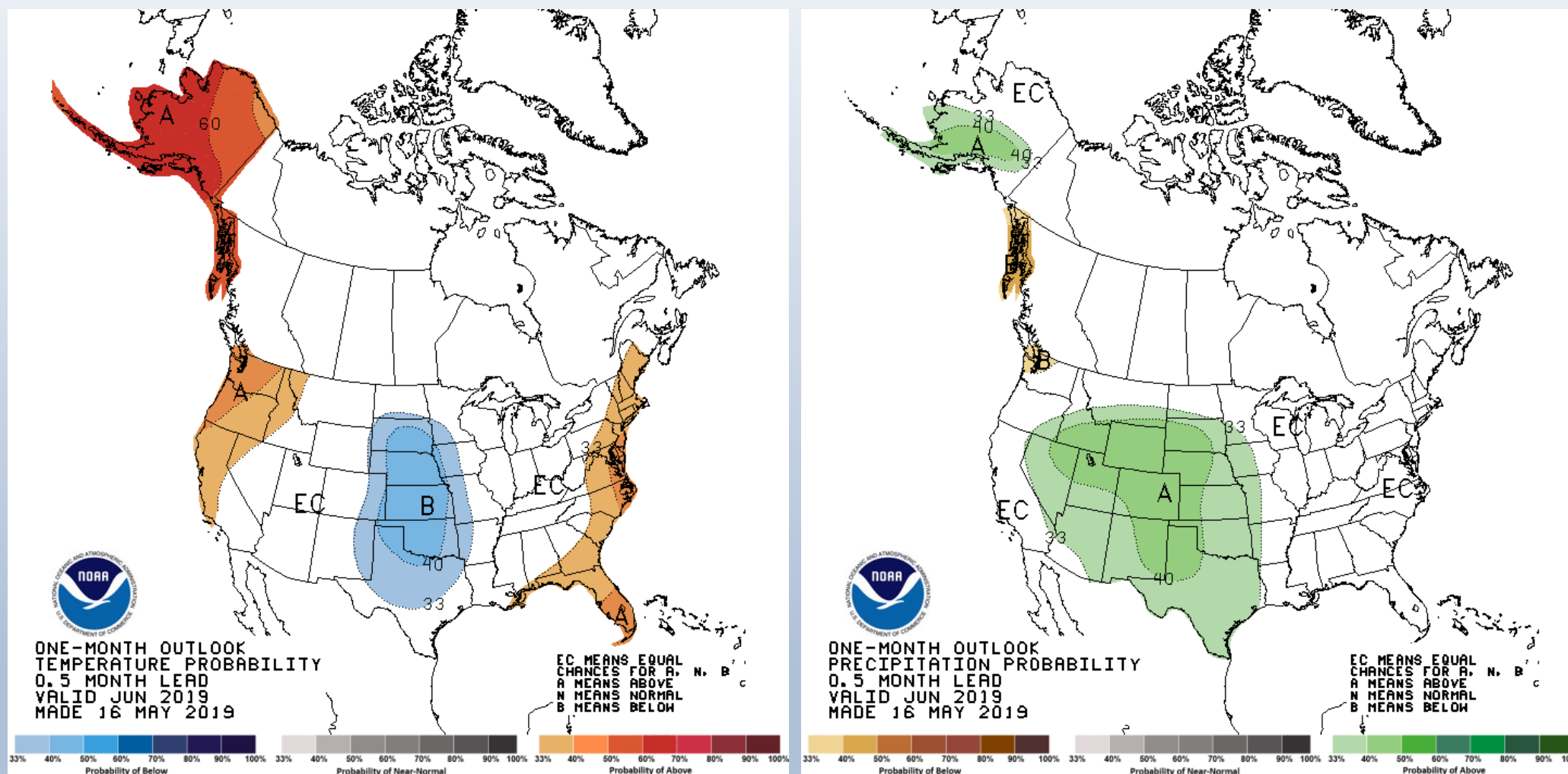
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**Figure 20-21.** Climate Prediction Center's Official June Outlook showing greater than average chances at above average precipitation and slightly better than average chances at below average temperatures for eastern NM with equal chances elsewhere. White areas mean **no outcome is favored** over another.

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- Forecasts from the two most highly skilled climate forecast models for June in New Mexico indicate that precipitation in central and northern New Mexico during June 2019 will most likely range from slightly above to above the 1981-2010 climatological averages.
- Temperature forecasts from the two most highly skilled climate models for June 2019 in New Mexico indicate that temperatures in central and northern New Mexico during June 2018 will mostly likely be near to slightly below average.

# 2019 June Outlook

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- **Outlook provided by National Weather Service Forecast Office Albuquerque, NM.**
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